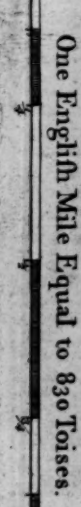


with *A SKETCH OF THE WORKS* which the French are now executing: *TO INCLOSE AND DEFEND THE ROAD, &c.*th

Third Edition Revised, Corrected and Improved.



DESCRIPTION of the PORT of CHERBOURG, with the NEW WORKS, now constructing to cover and defend that Road; particularly of the

DESCRIPTION of the PORT of CHERBOURG, with the NEW WORKS, now constructing to cover and defend that ROAD; particularly of the TRUNCATED CONES or CONICAL CAISSONS, invented by Monsieur DE CESSART, Inspecteur Général des Ponts & Chaussées.

THE scheme of enclosing the Road of Cherbourg was first projected in the last century, after the memorable battle of la Hogue in 1692. Marshal de Vauban, the inventor of that scheme, proposed to make two jetties, one from Ile Pelée, the other from Point du Hommet, with only one entrance, and that in the center between the two; but the long war concerning the Spanish succession and the very bad state of the French finances after the death of Louis XIV. prevented their paying any regard to Vauban's Plan; and the only attempt to improve Cherbourg (not its road) was made many years after by Cardinal de Fleury under Louis XV. A Balon was then constructed large enough to contain 400 vessels and ships of 40 or 50 guns; a large sluice was likewise built between the balon and the harbour for the purpose of cleansing and deepening the channel. This sluice was demolished in August 1758 by the English army that landed near Cherbourg; since that time nothing further has been done to either the harbour or the road, until 1783, when Marshal de Castries, minister of the navy, carried into execution the idea of Vauban and began the enclosing of the road with two Moles or Dykes, by means of the conical Caissons, instead of the two jetties originally intended.

The Distance from Querqueville Point to Ile Pelée is about 4½ miles; between these points the two Dykes or Moles are proposed to be made, leaving at each extremity Entrances of 1066 yards each, and one in the center of 853 yards wide. The North-West Entrance is to be protected by Fort Maigneur, now building at Querqueville Point; the North-East Entrance by Fort Royal on Ile Pelée, and the Middle Entrance by Fort d'Artois on Point du Hommet.

The Breadth of the proposed harbour is about two miles towards the town of Cherbourg, and the Foyle du Galle, where the water rises from 18 to 20 feet at spring tides; the latter place is well secured from the NW. and NE. winds, and will be easily enlarged, by taking in a piece of ground adjoining, called the King's Meadow, so as to contain 100 vessels: four hundred galley flaves are destined to execute this service, Docks are also intended to be built there; at present there is a depot of timber for the construction of the Cones, which are built upon the beach.

Fourteen Cones are already sunk, the first is placed about 1066 yards from Ile Pelée, the rest are from 130 to 140 yards from center to center; they are ten feet above high water mark at common tides; are completely filled with stones; and the Frames from the top to low water mark (which is about 25 feet) are covered with strong plank, and are intended to be plaited with Pozzolana. The intermediate spaces between the Cones are filled with loose stones, to about three feet above low water mark and 50 feet broad, so as to form a Dyke or Causeway; upon the north and south sides of these intervals are fired large quantities of live muskets, which, together with the sand and sea weed, are designed to fill up the interstices and to form a rocky substance, that must increase and strengthen the whole continually; the top of the dyke is to be further strengthened with masonry.

In the course of the winter 1785 the second Cone from Ile Pelée was broken by the violence of the surf, in consequence of which another Cone

has been sunk in its place: It appears that only one Mole is intended to be built at present, until the stability and effect of the plan have been fully ascertained. There are nine Fathoms at low water in the new harbour, and the tide rises 20 feet on full and change.

Fort d'Artois, situated on the Point du Hommet, forms an obtuse angle towards the Middle Entrance; the NW. face contains 11 pieces of cannon, the NE. 14 pieces, the west flank four, and the east flank two, which are all 48 pounders, upon marine traversing platforms; the Batteries towards the sea are casemated and surround the inclosure of the Fort, which is of an irregular form. The Batteries are also casemated and are intended to serve as a kind of Blockhouse, being (by means of a small ditch) detached from the batteries and are pierced with loop holes.

Fort Royal, on the Ile Pelée, is of a circular form towards the sea, and is closed in the Gorge by a small regular front; the Barracks are formed in the rear, and pierced with Loop Holes, those in the flank are large enough to admit of small cannon being used. The Batteries and Barracks are all casemated and planned upon the same principle as those of Fort d'Artois, this Fort mounts a greater number of cannon than pieces are therefore directed to that part and which likewise flank the eastern Mole. Ile Pelée is nearly covered at high water, and the shore towards the opening is very bold.

DESCRIPTION of the TRUNCATED CONES, or CONICAL CAISSONS.

THE Conical Caissons are of various sizes, from 147 feet diameter at the base, to 170½ and 179 feet. The first Caisson was 158 feet diameter; consequently the whole surface of its base was 19596 square feet, and, including its calks, covered about half an acre of ground. It was judged proper not to close the bottom of the Caisson, nor let it touch the ground, but only to rest it on the upright beams which compose the perpendicular height, as well as the diameter of the upper circle, is 64 feet, though some of the Caissons may be 80 feet high, according to the depth of the sea.

The Caissons are composed of 80 or 90 upright beams (according to their respective diameters), which are lined from end to end, and are built of pieces of timber from 24 to 30 feet in length: these are sustained by 20 circular ribs on the inside, and by 8 ribs on the outside, which, as well as the beams, are about 13 inches square. They are fastened together by iron bolts, weighing from 21 to 32 pounds, which are tinned over with a new composition, to prevent the marine acid from rusting them. There are 6000 bolts in each frame.

The Tides, or Slope of the Caisson, is 7½ inches per foot under an angle of 60 degrees. Its immersion is 60 feet at the highest spring tides, and 38 feet at the lowest neap tides. 25243½ cubic yards of stones (weighing 52465 tons, at about 2½ tons to each cubic yard), will fill one of these Caissons: the whole extent of the base is besides loaded with about 93½ tons of stones; and this last is done before they set it afloat, in order that the Caisson, on its immersion, may fix itself at the bottom of the sea, so as to resist the force of the tide of flood; the perpendicular rise whereof,

being about 19 feet, would be able to raise the Caisson one seventh part of its whole height.

The Weight of a Caisson so loaded is 770½ tons. They set it afloat by means of 64 large calks, about 12 feet 9 inches in length, and about 6½ feet in Diameter, and of 30 or 40 others of smaller dimensions. These are made fast round the base of the Caisson with strong cables, 7½ inches thick. From an experiment made in the Port of Cherbourg, each large calk is able to raise a mass of cannon ball, weighing nearly 14½ tons, and the whole of the calks will raise a weight equal to 915 tons; so that there remains an overplus of weight equal to about 144½ tons, in case of accidents.

The Cable-Netting at the base is designed to counteract the force of the surrounding calks, which, from their great buoyance, would otherwise tear the frame to pieces as soon as floated. The 4 large calks placed in the center are to keep the netting perfectly tight, their power being equal to 46 tons. When the Caisson is immersed, the netting remains at bottom, but the calks are preterred.

The Caissons are towed to the place of their immersion by means of a capstan, placed on a ponton, and worked by 40 men; four large flat-bottomed boats, with 72 oars each, tow the ponton. In calm weather they advance 12 or 13 yards in a minute, or near half a mile in one hour. There is likewise a frigate moored beyond the place of immersion, with a capstan, to which a cable (fastened also to the Caisson) is secured, to direct the towing, that it may not deviate from its proper course.

The Immersion of a cone is completed in one hour at most, by the successive removal of the calks, which is effected by means of Hatchets

having long handles or beams at right angles with the blades; these are fixed in a perpendicular direction round the bottom of the cone and communicate with the gallery by ropes. The Hatchets weigh about 120 pounds each, are numbered four by four, and upon being drawn up the side of the cone to a certain height, are let fall upon the braces of four calks diametrically opposite to each other, in the whole circumference of the base. This method is followed in order to keep an equal balance, according to the progress of the immersion; and with that view it is only after the whole is sunk, that they cut the four calks fastened at right angles in the center of the base.

If to a Caisson with its ballast, weighing 770½ tons, be added 25243½ cubic yards (weighing 52465 tons) of stones, which the Caisson contains, the whole mass will then weigh 53235½ tons. Now from that calculation, supposing the Caisson entirely covered with water, by the most violent storm the action of the sea will operate against the conical mass, at tons; which, being deducted from the entire mass (53235½ tons), there will remain to the Caisson, if taken in the most unfavourable view, when entirely covered with water, a preponderating weight of 33503½ tons, to keep it firmly fixed against all the power of the waves.

About 150 small vessels, called Chalfe-Marets, are employed in transporting stones for filling the Caissons and the intervals. And the number of men employed upon the different works are about 3000, mostly soldiers.